

2002
B-026

Report on Work for the
RELIEF AND CONTROL OF UNCLINARIASIS

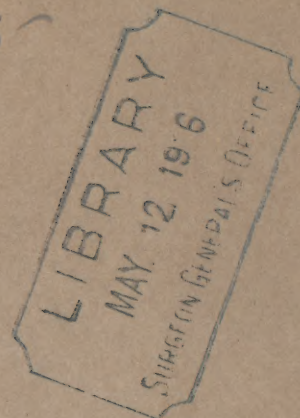
In Southern United States, Grenada,
Costa Rica, Guatemala, and Panama for
Quarter Ending March 31, 1915; also
Egypt for period Jan.1 to Feb.15, 1915.

THE ROCKEFELLER FOUNDATION
INTERNATIONAL HEALTH COMMISSION

61 BROADWAY, NEW YORK, U. S. A.

31098

Returns Room 28-



Report on Work for the . . .

RELIEF AND CONTROL OF UNCLINARIASIS IN SOUTHERN UNITED STATES

Quarter Ending March 31, 1915.

EXPLANATORY NOTE

1. The accompanying report for the Southern United States for the calendar quarter ending March 31, 1915, includes, with an introductory summary, the reports of the respective State Directors as submitted.

2. In recording the sanitary surveys and the sanitary progress in dispensary and community work, the state reports have employed the classification and sanitary values that were adopted at the Atlanta conference in 1911 and about which there have been differences of opinion among health officers, particularly emphasized since the advent of the pit privy. The 1914 report of The Rockefeller Sanitary Commission, because of the differences of opinion with regard to the sanitary values of the respective types of privies in use, will omit the classification altogether and indicate merely how many homes had a privy when the work began, and how many when it closed. The several states approving, this modification will be adopted also in future quarterly reports.

3. A form is being submitted for the consideration of the State Health Officers engaged in intensive community work that will provide blanks for indicating (1) the type of soil formation prevailing in the community; (2) for each home within the community will note especial cases where the privy, with reference to the drinking-water supply, is dangerously located; and (3) for all the homes will indicate the presence or absence of a privy, and for each privy found, its type. The form for the initial and final surveys, in addition to other blanks, will provide a table for the following information:

No. of Families Without Privies
No. of Families With Privies

Types of Privies Found:

- 1) Sewerage
- 2) Septic Tank: Cement
- 3) Septic Tank: Barrels
- 4) Pail: Fly-Proof Vault: Housed
- 5) Pail: Fly-Proof Vault: Unhoused
- 6) Pail: Vault Not Fly-Proof: Housed
- 7) Pail: Vault Not Fly-Proof: Unhoused
- 8) Pit Privy: Fly-Proof: Housed
- 9) Pit Privy: Fly-Proof: Unhoused
- 10) Pit Privy: Not Fly-Proof: Housed
- 11) Pit Privy: Not Fly-Proof: Unhoused
- 12) Open Privy: Closed Back
- 13) Open-Back Privy

mg 65410 1136983 DIRECT 2020129

If this table, or some modification of it, appeals to those State Health Officers engaged in the intensive community work, the Commission will be glad to supply report blanks to cover the recording of the sanitary surveys in the manner indicated. This will obviate the necessity for attaching sanitary values to the various types of privies. So far as the reports are concerned, if at any time, on the basis of further experience and study, the State Health Officers in conference should agree on sanitary values for the various types of privies, the information as recorded will be useful in connection with such an agreement.

4. In Ashe county, North Carolina, the county made an appropriation of \$250.00, which, owing to some misunderstanding with the field director, was withdrawn. In that county 505 persons were subsequently examined microscopically by another field director without the aid of county funds. Although the number of persons examined was as large as has been recorded in approximately 120 recorded county dispensary campaigns, and although approximately 48 recorded county dispensary campaigns in other states have been conducted without the aid of county appropriations, it has been decided, with the approval of the North Carolina State Health Officer, that in order to make the dispensary records in North Carolina uniform, the work done in Ashe county will be classified merely as an infection survey and not as a dispensary campaign. This change will appear in the annual report for 1914 and in all other reports following this one. This will slightly alter in future reports the information given in several tables in this report.

JAF/MKG

New York, July 15, 1915

SOUTHERN UNITED STATES.

1. The Work Undertaken. Work in the Southern United States during the quarter ending March 31, 1915, followed two main lines of activity: (1) Intensive Community Work; and (2) Dispensary Work. In those states which had been either wholly or very largely covered by county dispensaries before the activities of the Rockefeller Sanitary Commission closed on December 31, 1914, intensive community work was undertaken for the purpose of demonstrating: (a) that the infection with Uncinariasis in circumscribed areas could be measurably reduced; and (b) that measurable improvement could be made in these same areas in that phase of sanitation relating to soil-pollution.

Dispensary work was continued during the quarter in those states where there were heavily-infected counties still to be reached.

I. COMMUNITY WORK.

1. Plan of Work. Intensive community work contemplates the cure and prevention of Uncinariasis in circumscribed areas, by:

(A) CURATIVE MEASURES:

- (1) The microscopic examination of every inhabitant for Uncinariasis;
- (2) The treatment of every inhabitant found infected; and,
- (3) The weekly re-examination and re-treatment until cured of every inhabitant found infected; and,

(B) SANITARY MEASURES:

- (1) An inspection of privy conditions at every home within the area; and,
- (2) The construction of new or the improvement of old privies until every home in the community is provided with at least one privy of a type which will effectually check the spread of Uncinariasis by putting a stop to soil-pollution.

2. Extent of Operations. During the quarter, community work was completed in the following localities:

State	County	Community	Director	Assistant Director	Work Began	Work Ended
Mississippi	Forest Prentiss	Eaton-Grove Wheeler	R.N.Whitfield Henry Boswell	G.G.Hampton J.E.Friday	Feb. 1 Sept.22	March 31 March 31
North Carolina	Pitt	Falkland	M.E.Champion	W.S.Tuttle	Nov.21	March 31
	Pitt	Grimesland	M.E.Champion	W.C.Gay	Dec.12	March 31
	Scotland	St.John's	D.C.Absher and M.W.Steele	S.R.McKay	Oct.17	March 31
	Scotland	Snead's Grove	D.C.Absher and M.W.Steele	T.B.Stansel	Nov. 1	March 31
	Scotland	John's Station	D.C.Absher and M.W.Steele	F.P.Pace	Nov. 7	March 31
	Wayne	Rosewood	P.W.Covington	R.R.Bridges	Dec.12	March 31
South Carolina	Wayne	Smith's Chapel	P.W.Covington	Kolbe Curtice	Dec.12	April 14*
	Wayne	Eureka	P.W.Covington	Miss Livermore and Mr.Curtice	Feb. 1	May 1*
	Aiken	Kitching's Mills	F.M.Routh	F.C.Polk	Jan.23	April 27*
Virginia	Aiken	Bethcar	F.M.Routh	J.Q.Peebles	Feb. 6	April 27*
	Aiken	Otts	F.M.Routh	J.Q.Peebles	March 6	April 27*
Virginia	Southamp- ton	Courtland	E.L.Flanagan		Jan.15	March 31

3. Type of Communities Selected. Practically all the communities selected are agricultural.

As a rule, those communities are preferred which have a well-marked, progressive community-spirit, centering, perhaps, in the schools of the district.

Typical conditions in the various communities are exhibited in Table 1, which gives the average area, number of families, number of inhabitants, etc., for the fourteen communities completed during the quarter:

Table 1	Average
Area	11 (sq.mi.)
Number of schools,	2
No. of Families:	
(a) Total	137
(b) White	73
(c) Colored	63
(d) Indian	1
No. of Tenant Families:	
(a) Total	88
(b) White	30
(c) Colored	58
No. of Persons:	
(a) Total	655
(b) White	346
(c) Colored	306
(d) Indian	3

* Included as completed during first quarter, 1915, because work was so nearly finished on March 31, 1915.

Table 2 gives the same data, but itemizes it by communities:

Table 2*	Average	Total	NAME OF COMMUNITY**													
			Eaton Grove	Wheeler	Falkland	Grimes- land	Saint John's	Snead's Grove	John's Station	Rosewood	Smith's Chapel	Eureka	Kit- ching's Mills	Bethcar	Ott's	Court- land
1. Area, square miles	11	250	27	14	40	24	17	16	20	11	18	12	25	16	9	1
2. Number of schools	2	33	5	4	2	2	2	2	2	2	3	2	3	2	2	-
3. Number of families																
(a) Total	137	1913	178	221	103	144	136	138	130	127	157	124	207	99	68	81
(b) White	73	1027	106	193	64	93	77	49	37	72	81	60	61	54	33	47
(c) Colored	63	878	72	28	39	51	55	89	89	55	76	54	146	45	35	34
(d) Indian	1	8					4		4							
4. Number of tenant families:																
(a) Total	88	1149	62	117	66	80	94	120	107	82	96	78	143	60	44	--
(b) White	30	396	37	90	33	42	14	2	22	28	36	27	24	25	16	--
(c) Colored	58	753	25	27	33	38	80	118	85	54	60	51	119	35	28	--
5. Number of persons:																
(a) Total	655	9176	956	1108	491	677	637	742	582	584	757	586	991	411	308	346
(b) White	346	4848	545	936	328	389	349	252	166	300	415	279	276	235	135	243
(c) Colored	306	4287	411	172	163	288	262	490	401	284	342	307	715	176	173	103
(d) Indian	3	41					26		15							

4. Examining and Treating Infected Persons. The number of persons residing in these fourteen communities was 9,176. Of these, 6,565, or 71.5 per cent., were microscopically examined for Uncinariasis, and 1,270, or 19.5 per cent. of those examined, were found infected. First treatments were administered to 1,110 persons, or 85.2 per cent. of those found infected; and 254, or 22.9 per cent. of the persons treated, were shown by microscopic re-examination to be cured.

Table 3 gives the results for each community in examining for, treating, and curing Uncinariasis:

Table 3*	TOTAL		NAME OF COMMUNITY**																											
			Eaton Grove		Wheeler		Falkland		Grimes-land		Saint John's		Snead's Grove		John's Station		Rosewood		Smith's Chapel		Eureka		Kitching's Mills		Bethcar		Ott's		Court-land	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.		
1. Census	9176	----	956	----	1108	----	491	----	677	----	637	----	742	----	582	----	584	----	757	----	586	----	991	----	411	----	368	----	346	----
2. Persons Microscopically Examined	6565	71.5	504	52.7	966	87.2	332	67.6	259	38.3	565	88.7	417	56.2	428	73.5	442	75.7	507	67.0	455	77.6	657	86.5	374	91.0	282	91.9	176	56.9
3. Persons Found Infected	1279	19.5	88	17.5	49	5.1	56	16.9	46	17.8	187	33.1	118	28.3	142	33.2	81	18.3	219	43.2	49	10.8	71	8.3	109	29.1	60	21.2	4	2.3
4. Persons Treated	1110	85.2	88	100.	47	95.9	23	41.1	32	69.6	182	97.3	84	71.2	133	93.7	80	98.8	219	100.	49	100.	2	2.8	109	100.	60	100.	2	50.0
5. Persons Cured***	254	22.9	--	----	14	29.8	4	17.4	16	50.0	80	44.0	7	8.3	42	31.6	37	46.3	19	8.6	23	46.9	--	----	9	8.3	2	3.3	1	50.

*Figures for work accomplished outside of the community boundaries are excluded.

**The state and county in which the community is located; the name of the director and assistant director, and the time consumed in completing the work, will be found at the top of page 2.

***It is the custom to administer from one to six treatments. These treatments generally produce cures. For determining positively which cases have been cured, a microscopic re-examination is required from two to eight weeks after treatment. Often this re-examination cannot be made. Consequently, the number of persons recorded as positively cured is reduced.

5. Sanitary Improvement. In securing the installation of improved privies at every house in the fourteen communities, very gratifying progress was made. When the work began, it was found from sanitary surveys that only 1,022, or 53.4 per cent. of the 1,913 houses, had privies of any kind; and that 996, or 87.5 per cent., of the privies in use were of the old, open-seat, open-back, insanitary type. At the conclusion of the work, there were privies at 1,696, or 88.7 per cent., of the homes; and of these 1,696 privies, only 206, or 12.1 per cent., were of the open-seat, open-back type. The results for this feature of the work are summarized in Table 4:

Table 4*	Number	Per cent. of Whole
1. Number of houses in the communities,	1913	----
2. Number of new privies built,	674	35.2
3. Number of old privies improved,	794	41.5
	1468	76.7
4. Number of old privies unimproved,	228	11.9
5. Number of houses without privies,	217	11.3
	445	23.2

Table 5 shows the extent of progress made in each community in having the inhabitants protect themselves against the dangers of soil-pollution:

Table 5*	Final Inspection							Initial Inspection						
	Type of Privy							Type of Privy						
	A	B or P**	C	D	E	F	Total	A	B or P**	C	D	E	F	Total
TOTAL	26	1458	5	1	206	217	1913	17	1	3	5	996	891	1913
Eaton Grove	1	102			26	47	178	1				78	99	178
Wheeler	4	188			15	14	221					87	134	221
Falkland	2	88			7	6	103	2				89	12	103
Grimesland	5	96			32	10	144	5				92	47	144
St. John's	1	131			2	2	136	1				56	79	136
Snead's Grove	1	65			26	46	138	1				68	69	138
John's Station	3	86			14	27	130	3				64	63	130
Rosewood		71	1	1	36	18	127			1	1	90	35	127
Smith's Chapel		128			21	8	157			2	2	79	76	157
Eureka		88			26	10	124			2	2	61	59	124
Kitching's Mills ...	3	204					207	1				92	114	207
Bethcar		71			1	27	99					29	70	99
Otts		68					68					35	33	68
Courtland	5	72	4				81	4				76	1	81

*Figures for work accomplished outside of the community boundaries are excluded.

**The pit privy has been rated as P, and for convenience placed in the column with the privies of the B class, pending the assignment of a sanitary value to the pit privy.



6. Per Capita Expenditure: Groups of Communities Compared with Single Communities. In an effort to reduce the expense of community work, the experiment was tried of combining two or more communities in a county into a single working unit, and placing these communities under the supervision of one field director. In Pitt county, North Carolina, two communities were thus combined; and three each in Scotland and Wayne counties, North Carolina, and in Aiken county, South Carolina. Of the fourteen communities completed during the quarter, only three (Eaton Grove, Wheeler, and Courtland) were worked singly, the other eleven having been worked on the group plan.

Table 6 compares the per capita expenditure for working the communities on the group plan with that for working them singly. A total of approximately \$6,638.75 was expended by the International Health Commission in the eleven communities worked on the group plan, which gives a per capita expenditure, based on a population of 6,766 persons, of \$.98, as compared with a per capita expenditure of \$1.26 for the three communities worked singly, which had a total of 2,410 inhabitants, and in which approximately \$3,045.89 was expended by the International Health Commission:

Communities Worked in Groups				Communities Worked Singly			
	Per Capita Expendi- ture	Amount Expen- ded*	Census		Per Capita Expendi- ture	Amount Expen- ded*	Census
TOTAL	\$.98	\$6,638.75	6,766	TOTAL,	\$1.26	\$3,045.89	2,410
Falkland..(Grimesland)	1.22	1,422.20	1,168				
St. John's.....)							
Snead's Grove.(-.....)	1.06	2,079.00	1,961	Eaton Grove, .....	.59	566.66	956
John's Station)							
Rosewood.....)							
Smith's Chapel(-.....)	1.02	1,954.08	1,927	Wheeler,	1.60	1,770.91	1,108
Eureka.....)							
Kitching's Mills)							
Bethcar.....(-.....)	.69	1,183.47	1,710	Courtland,	2.05	708.32	346
Otts.....)							

7. Per Capita Expenditure: Average for Each Community. The aggregate amount expended by the International Health Commission in the fourteen communities completed during the quarter, was approximately \$9,684.64. This is exclusive of the expenses of the microscopists and other incidental expenses borne by the communities. The total population of these fourteen communities

*Approximate.

was 9,176 persons. The per capita expense to the Commission, based on the number of inhabitants, was therefore \$1.06.

Table 7 shows separately the approximate amount of money spent, the number of inhabitants, and the per capita expenditure for each community:

Table 7	Per Capita Expenditure	Amount Expended*	Census
TOTAL,	\$1.06	\$9,684.64	9,176
Eaton Grove, .....	.59	566.66	956
Wheeler,	1.60	1,770.91	1,108
Falkland,	1.45	711.10	491
Grimesland,	1.05	711.10	677
St. John's,	1.09	693.00	637
Snead's Grove, .....	.93	693.00	742
John's Station,	1.19	693.00	582
Rosewood,	1.16	626.76	584
Smith's Chapel, .....	.86	649.72	757
Eureka,	1.16	677.60	586
Kitching's Mills, .....	.40	394.49	991
Bethcar, .....	.96	394.49	411
Otto,	1.28	394.49	308
Courtland,	2.05	708.32	346

8. Incidental Results of the Work. It should be noted that all of the results accomplished by intensive community work are not shown in the preceding summaries. All figures have been excluded from the tables except those for work accomplished within the boundaries of the community, and within the period of time during which work in the communities was in progress. It has been found, however, that the influence of the work within the community boundaries extends into the surrounding country; and that large numbers of persons are examined who reside outside the community, and many privies are installed or improved at homes which are not included in the community survey. A very perceptible improvement in sanitary conditions often takes place in the territory immediately adjoining areas in which community work has been undertaken. Again, it has been found that many families which were unable, from one cause or another, to install or improve privies at their homes while the work was going on, have made the necessary improvement after the community work was finished. Definite figures for incidental results of this kind, however, are not included as part of the regular community record.

* Approximate.

9. Local Cooperation. It has been difficult in some cases to find communities ready to lend the prescribed cooperation. After the work has made some advancement in certain localities, however, it has not been uncommon for other communities to take the initiative in asking for the work, and offering to provide whatever cooperation may be required. In at least two counties where whole-time health officers are employed, the county boards of health have instructed these health officers to continue intensive community work on the general plan demonstrated in those counties by the field directors. The Virginia State Board of Health, after having seen a demonstration of the possibilities in community work, has voted funds for continuing it; and has invited the International Health Commission to cooperate in further extending it.

II. DISPENSARY WORK.

CHAPTER I - GENERAL SUMMARY.

1. Extent of Operations. Some of the heavily-infected counties in the states of Alabama, Georgia, Tennessee, and Texas had not been reached by dispensary work when the activities of the Rockefeller Sanitary Commission came to a close on December 31, 1914. The International Health Commission on January 1, 1915, assumed the place of the Rockefeller Sanitary Commission in aiding these states to continue the dispensary work, in an effort to extend to the inhabitants of all these heavily-infected counties an opportunity to be examined for Uncinariasis, and, if infected, to receive the benefits of treatment.

2. Plan of Work. The dispensary plan of work has three main features: (1) the Dispensary Work proper, consisting of the examination and treatment of infected persons; (2) an Infection Survey, consisting of the microscopic examination of a minimum of two hundred rural children of school age (6-18 years) taken at random in each county; and (3) a Sanitary Survey, consisting of the inspection of privy conditions at at least one hundred rural homes in each county. The infection and sanitary surveys are made as incidental features of the dispensary work, without increasing very greatly the expenditure of either time or money.

3. Persons Microscopically Examined: To Date. The total number of persons microscopically examined for Uncinariasis in the eleven Southern states, up to March 31, 1915, by the field

staff and state laboratories combined, was 1,323,226. Of these, 1,136,510, or 85.9 per cent. were examined by the field staff; and 186,716, or 14.1 per cent., by the state laboratories.

Table 8 shows by states the number of persons examined by both agencies up to March 31, 1915:

Table 8	TOTAL	By Field Staff	By State Laboratory
TOTAL	1,323,226	1,136,510	186,716
Alabama,	60,331	57,250	3,081
Arkansas,	54,465	52,970	1,495
Georgia,	118,034	102,607	15,427
Kentucky,	202,309	128,030	74,279
Louisiana,	59,548	55,002	4,546
Mississippi,	174,168	166,623	7,545
North Carolina, ...	321,377	279,169	42,208
South Carolina, ...	72,144	58,787	13,357
Tennessee,	88,285	85,188	3,097
Texas,	70,633	68,357	2,276
Virginia,	101,932	82,527	19,405

4. Persons Microscopically Examined; First Quarter, 1915. The total number of persons microscopically examined in the states where dispensary work was in progress during the first calendar quarter of 1915, by the field staff and state laboratories combined, was 49,376. Of these, 48,339, or 97.9 per cent., were examined by the field staff; and 1,037, or 2.1 per cent., by the state laboratories. The results for the first quarter of 1915 in examining for Uncinariasis are given in Table 9:

Table 9	TOTAL	By Field Staff	By State Laboratory
TOTAL	49,376	48,339	1,037
Alabama,	4,787	4,508	279
Georgia,	29,655	29,329	326
Tennessee,	9,842	9,521	321
Texas,	5,092	4,981	111

5. Persons Treated: To Date. A total of 711,414 persons was treated for Uncinariasis in the eleven Southern states up to March 31, 1915. This includes the work of the field staff and the practicing physicians. The number of persons treated by the field staff was 456,878, or 64.2 per cent.; by the practicing physicians, 254,536, or 35.8 per cent. Table 10 exhibits for each state the total number of persons treated, and shows separately the number treated by practicing physicians and by the field staff:

Table 10	TOTAL	Field Staff	By Practicing Physicians
TOTAL	711,414	456,878	254,536
Alabama,	53,160	45,019	8,141
Arkansas,	10,393	6,970	3,423
Georgia,	91,403	57,121	34,282
Kentucky,	103,693	37,916	65,777
Louisiana,	50,514	37,225	13,289
Mississippi,	112,737	73,919	38,818
North Carolina, ...	160,711	99,012	61,699
South Carolina, ...	51,337	38,411	12,926
Tennessee,	27,525	25,573	1,952
Texas,	24,235	18,603	5,632
Virginia,	25,706	17,109	8,597

6. Persons Treated: First Quarter, 1915. A total of 16,898 persons was treated during the quarter ending March 31, 1915, by the staff and practicing physicians combined. Of these, 16,480, or 97.5 per cent., were treated by the field staff; and 418, or 2.5 per cent., by the practicing physicians. The figures for each state for the first calendar quarter of 1915 are given in Table 11:

Table 11	TOTAL	By Field Staff	By Practicing Physicians
TOTAL	16,898	16,480	418
Alabama,	1,499	1,499	---
Georgia,	11,627	11,627	---
Tennessee,	2,326	2,241	85
Texas,	1,446	1,113	333

7. Counties Having Dispensary Work Completed. The total number of counties having dispensary work completed up to March 31, 1915, was 628. Work in forty-nine of these counties was completed during the first quarter, 1915. Table 12 shows by states the number of counties in which dispensary work has been completed:

Table 12	Number Up To March 31, 1915	Number During First Quarter, 1915	Number Prior To First Quarter, 1915
TOTAL	628	49	579
Alabama,	60	7	53
Arkansas,	43	--	43
Georgia,	93	27	66
Kentucky,	32	--	32
Louisiana,	49	--	49
Mississippi,	76	--	76
North Carolina, ...	100	--	100
South Carolina, ...	41	--	41
Tennessee,	52	9	43
Texas,	51	6	45
Virginia,	31	--	31

8. Counties Having Infection Surveys Completed. Infection surveys were completed in 634 counties up to March 31, 1915. Thirty-eight of these surveys were made during the first quarter, 1915. The number of infection surveys made in each state, prior to, during, and through the quarter ending March 31, 1915, is shown in Table 13:

Table 13	Number Up To March 31, 1915	Number During First Quarter, 1915	Number Prior to First Quarter, 1915
<u>TOTAL</u> ,	634	38	596
Alabama,	39	3	36
Arkansas,	48	--	48
Georgia,	92	23	69
Kentucky,	22	--	22
Louisiana,	55	--	55
Mississippi,	78	--	78
North Carolina, ...	100	--	100
South Carolina, ...	32	--	32
Tennessee,	62	6	56
Texas,	47	5	41
Virginia,	59	--	59

9. Counties Having Sanitary Surveys Completed. The total number of counties in the eleven Southern states in which sanitary surveys had been completed, up to March 31, 1915, was 689. Of these, thirty-six were completed during the first quarter, 1915. The figures for each state are given in Table 14:

Table 14	Number Up To March 31, 1915	Number During First Quarter, 1915	Number Prior To First Quarter, 1915
<u>TOTAL</u> ,	689	36	653
Alabama,	50	3	47
Arkansas,	50	--	50
Georgia,	92	24	68
Kentucky,	37	--	37
Louisiana,	55	--	55
Mississippi,	77	--	77
North Carolina, ...	100	--	100
South Carolina, ...	41	--	41
Tennessee,	72	3	69
Texas,	48	5	42
Virginia,	67	--	67

CHAPTER II - DETAILED REPORT FOR FIRST QUARTER, 1915.

1. Results Itemized by States. Figures in detail showing results accomplished in the states of Alabama, Georgia, Tennessee, and Texas, during the quarter ending March 31, 1915, are given in the following pages:

ALABAMA

1) WORK OF FIELD DIRECTORS
a. Examinations

County	Field Director	Appropriated	Expended	Duration of Campaign							Examinations						
				Sec'g Appr'n	Advertising	Holding Disps's.	Educational Wk.	School Work	Work in Homes	Total	Total Number	Total Positive	Positive to:				
													Uncinariasis	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	T.Saginata	T.Nana
Cleburne	Meriwether	\$ 37.72	\$ 37.72								1565	449	449				
Montgomery	Williams	248.77	248.77								1371	686	686				
Morgan	Orr	50.00	50.00								25	1	1				
Randolph	Meriwether	31.20	31.20								877	234	234				
St. Clair	Orr	7.00	7.00								143	2	2				
Talladega	Caldwell	200.00	91.50								171	35	35				
Cullman*	Caldwell	100.00															
Jackson*	Williams	49.00															
Shelby#	Williams	23.00	23.00								356	92	92				
Total.		746.69	489.19								4508	1499	1499				

b. Treatments and Educational Work

County	Field Director	Number of Persons and Times Treated										Educational					
		Treatments for Hookworm							Treatments for Other Parasites			Kind of Lectures					
		First	Second	Third	Fourth	Fifth	Sixth	Seventh	Total	Ascariis	Hymenolepis	Trichocephalus	Oxyuris	T. Saginata	T. Nana	Total for Other Parasites	Public
Cleburne	Meriwether	453	111						564								38
Montgomery	Williams	688	117	2					807								4450
Morgan	Orr	1							1								14
Randolph	Meriwether	234							234								565
St. Clair	Orr	--							--								250
Talladega	Caldwell	35	9	4					48								485
Shelby#	Williams	88							88								360
Total,		1499	237	6					1742								194
																	17623
																	59
																	3230
																	3
																	97

c. Infection Survey

County	Surveyed By	Number Examined	Number Infected	Percent of Infection
Cleburne	Meriwether	788	348	44.1
Montgomery	Williams	722	536	74.2
Randolph	Meriwether	382	172	45.0
Total,		1892	1056	55.8

*Expenditures reported last quarter.

#Work conducted during April, 1915.

ALABAMA (continued)

1) WORK OF FIELD DIRECTORS
d. Sanitary Survey

County	Surveyed By	Type of Privy						Sanitary Index
		A	E	C	D	E	F	Total
Cleburne	Meriwether				10	76	99	185
Montgomery	Williams					143	30	173
Talladega	Caldwell					69	40	109
Total,					10	288	169	467

2) WORK OF STATE LABORATORY

	Total Specimens	Total Positive	Positive to:							
			Hookworm	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	Taenia Saginata	Taenia Nana	Protozoa
Examinations for Our Staff*										
Examinations for Physicians and Miscellaneous	279	92	62	16	4	2				8
Total Examinations	279	92	62	16	4	2				8

* These are credited to counties from which they were sent in.

3) WORK OF CENTRAL OFFICE

ENLISTING PHYSICIANS				EDUCATIONAL					
Number of Physicians				By Correspondence		By Addresses			
In State	Reporting	Reporting "Treating Hookworm"	No. Persons Reported Trtd. by Physicians	No. Letters Mailed	No. Pieces Literature Distributed	Public	School	Special	
						Number	Attendance	Number	Attendance
---	---	---	---	700	10,000	--	---	--	---

4) EXPENDITURES

Local Funds								Inter-national Health Comm.	TOTAL*
Indirect*					Direct				
STATE					STATE	COUNTY	From Other Sources		
Rent	Heat, Light &c.	Postage	Printing, Office Sup's &c						
--	--	--	--	--	----	\$466.19	---	\$4112.27	\$4578.46

*Indirect expenditures, including estimated state funds, are not added in total with direct expenditures.

GEORGIA

1) WORK OF FIELD DIRECTORS
a. Examinations

County	Field Director	Appropriated	Expended	Duration of Campaign							Examinations							
				Sec'g Appr'n	Advertising	Holding Disp.	Educ. Work	School Work	Securing Drs. Endorsement	Total	Total Number	Total Positive	Positive to:					
													Uncinariasis	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	T. Saginata	T. Nana
Baker	Wood	\$150.00	\$150.00		2	18	2			22	931	715	710	2	1	1		
Bleckley	Whittle	165.15	165.15		1	20	1	1		23	1937	1199	1184	9	25	1		
Calhoun	Henry	130.00	127.57	1	3	19	3			26	1361	575	575		3			
Campbell	Howell	150.00	90.63	2	3	20			2	27	625	59	58	20	10	1		
Cobb	Howell	150.00	116.86		2	18	1		2	23	798	143	102	22	19			2
Columbia	Riser	150.00	149.85	1	9	25	1			36	609	115	106		9			
Coweta	Buchanan	150.00	112.95		5	15	1	6		28	651	85	73	9	3			
Crawford	Dedwylder	125.00	82.92		1	17		5		23	1471	425	425	5	3	2		
Dodge	Whittle	250.00	229.71			25	3	1		29	3290	2421	2418		19			
Dougherty	Wood	150.00	145.80	1	1	21	4			27	890	190	171	7	11			2
Echols	Dedwylder		73.10		5	12	2	1		20	514	327	327				2	
Effingham	Leonard	100.00	94.96		4	20		1		25	1581	696	679	15	1	1		
Glascock	Rodgers		127.34	1	1	17	1			20	848	756	755	1	3			
Gwinett	Verner	150.00	148.85		7	20		1		28	1733	279	234	11	22			1
Harris	Moore	150.00	145.00		5	21	1	1		28	683	198	198	3				1
Heard	Applewh'e		89.91		2	10		3	2	17	1341	268	224	13	32			
Jeff Davis	Dedwylder	100.00	100.84		5	17		1	1	24	615	431	431	1	5			
Madison	Collinson	100.00	100.00		2	15		4	3	24	1372	284	284					
Milton	Verner		86.23		1	14		6		21	594	141	131	10	4			4
Oconee	Riser	100.00	101.93		3	19	1			23	909	224	188	9	25		3	
Quitman	Henry	100.00	100.00	2	3	20				25	938	424	424	4	2			
Richmond	Rodgers	200.00	158.94	2	6	17	2			27	924	448	405		44	1		
Talbot	Moore	100.00	100.00	1	8	16	2			27	629	290	290	14				3
Taliaferro	Collinson	100.00	93.90		2	18	2	4	1	27	341	27	27					
Terrell	Applewh'e	150.00	125.42	5	2	18	6			32	1781	428	413	2	14			
Troup	Buchanan	150.00	98.33	1	2	18	3		3	27	663	74	65		9			
Twiggs	Whittle	150.00	150.00		1	20		1		22	1300	836	831	1	5			
Total,		3220.15	3266.19	18	87	490	36	36	14	681	29329	12088	11728	158	269	5	8	13

GEORGIA (continued)

1) WORK OF FIELD DIRECTORS
a. Treatments and Educational Work

County	Field Director	Number of Persons and Times Treated							Educational					
		Treatments for Hookworm							Kind of Lectures					
		First	Second	Third	Fourth	Fifth	Sixth	Total	Public	School	Special			
									Number	Atten- dance	Number	Atten- dance	Number	Atten- dance
Baker	Wood	710	408	76	3			1197	25	1289	7	253	3	23
Bleckley	Whittle	1183	585	243	24	1		2036	46	2724	8	540		
Calhoun	Henry	575	299	256	6	1		1137	23	936	22	1041	1	5
Campbell	Howell	70	53	53	53	2		231	23	744	2	55	1	35
Cobb	Howell	104	98	98	98	11		409	11	1185				
Columbia	Riser	108	79	66	35			288	28	1477	8	517		
Coweta	Buchanan	73	65	65				203	32	1061	10	805		
Crawford	Dedwylder	420	383	383				1186	3	250	34	2515	1	100
Dodge	Whittle	2418	1207	782	22	5		4434	39	2308	29	2093	1	40
Dougherty	Wood	171	162	65	2	2		402	25	875	22	1216		
Echols	Dedwylder	327	319	319				965	5	250	19	1290		
Effingham	Leonard	678	576	535	1			1790	21	2065	10	463		
Glascock	Rodgers	739	683	636	638	2	2	2700	5	610	11	687		
Gwinett	Whittle	234	219	173	1			627	19	1105	11	1260		
Harris	Moore	196	87	60				343	14	625	14	754		
Heard	Applewhite	184	184	184				552	15	933	43	1831	1	20
Jeff Davis	Dedwylder	431	431	435				1297	7	425	23	1125	4	260
Madison	Collinson	284	238	182	12	1		717	15	1220	7	700		
Milton	Verner	96	96	96				288	19	1010	18	1235	1	40
Oconee	Riser	170	137	106	13			426	32	1399	11	1220		
Quitman	Henry	424	255	181	1			861	23	501	14	467	1	42
Richmond	Rodgers	401	373	367	362			1503	3	380	7	1008	1	90
Talbot	Moore	319	236	97				652	13	619	6	277	2	38
Taliaferro	Collinson	26	25	23				74	12	320	13	510		
Terrell	Applewhite	388	386	381				1155	14	892	42	3685	1	11
Troup	Buchanan	65	65	65				195	13	982	11	772		
Twiggs	Whittle	833	382	280	20	6	5	1526	35	1244	18	498		
Total,		11627	8031	6207	1291	31	7	27194	520	27429	420	26817	18	704

GEORGIA (continued)1) WORK OF FIELD DIRECTORS
c. Infection Survey

County	Surveyed By	Number Examined	Number Infected	Percent of Infection
Baker	Wood	483	465	96.2
Bleckley	Whittle	602	581	96.5
Calhoun	Henry	535	307	57.3
Campbell	Howell	310	43	13.8
Cobb	Howell	251	48	19.1
Columbia	Riser	225	62	27.5
Coweta	Buchanan	374	61	16.3
Crawford	Dedwylder	676	253	37.4
Dodge	Whittle	1098	1060	96.5
Dougherty	Wood	421	102	24.2
Echols	Dedwylder	320	285	89.0
Effingham	Leonard	645	614	95.1
Glascock	Rodgers	411	409	99.5
Gwinnett	Verner	1194	174	14.5
Harris	Moore	528	189	35.7
Heard*	Applewhite	784	121	15.4
Jeff Davis	Dedwylder	362	315	87.0
Madison	Collinson	791	205	25.9
Milton*	Verner	297	34	11.4
Quitman	Henry	510	320	62.7
Richmond	Rodgers	259	180	69.5
Talbot	Moore	452	231	51.1
Taliaferro	Collinson	183	20	10.9
Terrell*	Applewhite	894	248	27.7
Troup	Buchanan	284	44	15.5
Twiggs	Whittle	301	296	98.3
Oconee*	Riser	309	68	22.0
Total,		13449	6735	50.0

*Partially reported in last quarter 1914.

GEORGIA (continued)

1) WORK OF FIELD DIRECTORS
d. Sanitary Survey

County	Surveyed By	Type of Privy						Sanitary Index
		A	B	C	D	E	F	Total
Baker	Wood					136	135	271
Bleckley	Whittle					116	138	254
Calhoun	Henry					112	65	177
Campbell	Howell					93	140	233
Cobb	Howell	1				123	95	219
Columbia	Riser					85	68	156
Coweta	Buchanan					145	27	172
Crawford	Dedwylder					118	245	363
Dodge	Whittle					192	157	349
Dougherty	Wood					164	255	419
Echols	Dedwylder					176	229	405
Effingham	Leonard					193	47	240
Glascock	Rodgers					86	69	155
Harris	Moore				46	407	16	469
Heard	Applewhite					146	118	264
Jeff Davis	Dedwylder					332	253	585
Milton	Verner					181	139	320
Quitman	Henry					68	77	145
Richmond	Rodgers					220	74	294
Talbot	Moore					358	46	404
Taliaferro	Collinson					75	156	231
Terrell	Applewhite					155	50	205
Troup	Buchanan					202	174	376
Twiggs	Whittle					19	91	110
Gwinnett*	Verner					136	135	271
Madison*	Collinson					234	136	370
Oconee*	Riser					214	68	282
Total,		1			46	4489	3203	7739

* Second surveys.

GEORGIA (continued)

2) WORK OF STATE LABORATORY

	Total Specimens	Total Positive	Positive to:									
			Hookworm	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	Taenia Saginata	Taenia Nana	Ameba		
Examinations for Our Staff*	53	9	9									
Examinations for Physicians and Miscellaneous	326	109	88	8	7	2	1			3		
Total Exams.,	379	118	97	8	7	2	1			3		

* These are credited to counties from which they were sent in.

3) WORK OF CENTRAL OFFICE

ENLISTING PHYSICIANS				EDUCATIONAL					
Number of Physicians			No. Persons Reported Trtd. by Physicians	By Correspondence		By Addresses			
In State	Reporting	Reporting "Treating Hookworm"		No. letters Mailed	No. Pieces Literature Distributed	Public	School	Special	
						Number	Attendance	Number	Attendance
---	---	---	---	10246	25580	2	825	--	---

4) EXPENDITURES

Local Funds										Inter- national Health Comm.	TOTAL*
Indirect*						Direct					
STATE						STATE	COUNTY	From Other Sources			
Rent	Heat, Light &c	Postage	Printing, Office Sup's &c.	.	.						
\$30.	30.	30.	50.			----	\$2889.61	---	\$11631.86	\$14521.47	

* Indirect expenditures, including estimated state funds, are not added in total with direct expenditures.

TENNESSEE1) WORK OF FIELD DIRECTORS
a. Examinations

County	Field Director	Appropriated	Expended	Duration of Campaign							Examinations								
				Sec's Appr'n	Advertising	Holding Disp's.	Educational Wk.	School Work	Work in Homes	Total	Total Number	Total Positive	Positive to:						
													Uncinariasis	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	T. Saginata	T. Nana
Bledsoe	Townsend		\$73.05		5	15	3			23	280	142	84	34		2	6		14
Carroll	Rude										213	74	74						
Benton	Rude										203	54	54						
Grundy	Yancey	\$250.00	63.03	5	4	26	3			39	702	286	187	105		5	2	2	12
Hardeman	Townsend		109.75		5	15	3			23	620	96	61	28			1		7
Hardin	Robinson	175.00	104.93			18				18	1151	172	103	44		6	1		35
Henderson	Robinson	200.00	90.53			20				20	2075	535	524	121		5			12
Henry	Rude		50.00		7	15				22	913	358	196	170		22			17
McNairy	Robinson		29.35		2	15	3			20	747	198	162	28		1	1		17
Macon	Yancey										283	87	71	37		3	6		6
Morgan	Rude	175.00	70.04	1	2	17				20	1521	830	533	340		49	5		28
Sequatchie	Townsend	100.00	70.00	1	4	15	3			23	755	347	195	81		11	25	2	33
Trousdale	Yancey										58	9	6	1		3	1		1
Total		900.00	560.68	8	29	156	15			208	9521	3188	2250	989		107	48	4	182

b. Treatments and Educational Work

County	Field Director	Number of Persons Treated							Educational					
		Treatments for Hookworm							Kind of Lectures					
		First	Second	Third	Fourth	Fifth	Sixth	Total	Public		School		Special	
									Number	Atten- dance	Number	Atten- dance	Number	Atten- dance
Benton	Rude	54	54	54				162	1	100				
Bledsoe	Townsend	84	54	47				185	5	400	1	150		
Carroll	Rude	74	74	74				222	2	285	1	100		
Grundy	Yancey	178	125	121				424	17	285	1	89		
Hardeman	Townsend	61	55	53				169	5	350	1	150		
Hardin	Robinson	103	91	88				282	12	546				
Henderson	Robinson	524	510	510				1544	11	620	19	961		
Henry	Rude	196	185	182				563	4	650	4	650		
McNairy	Robinson	162	159	159				480	11	386	5	485		
Macon	Yancey	71						71	2	250	2	369		
Morgan	Rude	533	498	494				1525	8	600	6	375		
Sequatchie	Townsend	195	161	156				512	3	350				
Trousdale	Yancey	6						6	2	120	2	300		
Total,		2241	1966	1938				6145	83	4942	42	3629		

19

County	Surveyed By	Number Examined	Number Infected	Percent of Infection
Benton	Rude	203	54	26.7
Carroll	Rude	213	74	34.7
Grundy	Yancey	364	158	43.4
Morgan	Rude	741	359	48.4
McNairy	Robinson	351	115	32.7
Weakley	Robinson	262	4	1.52
Total.		2134	764	35.8

d. Sanitary Survey

County	Surveyed By	Type of Privy							Sanitary Index
		A	B	C	D	E	F	Total	
Benton	Rude			1	3	72	126	202	4.2
Carroll	Rude				5	79	158	242	3.7
Morgan	Rude			2	5	65	208	280	3.1
Total,				3	13	216	492	724	3.6

2) WORK OF STATE LABORATORY

	Total Specimens	Total Positive	Positive to:									
			Hookworm	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	Taenia Saginata	Taenia Mema	Others		
Examinations for Our Staff*												
Examinations for Physicians and Miscellaneous	321	75	35	9		5		2	7	17		
Total Exams.	321	75	35	9		5		2	7	17		

*These are credited to counties from which they were sent in.

3) WORK OF CENTRAL OFFICE

ENLISTING THE PHYSICIANS				EDUCATIONAL							
Number of Physicians			No. Persons Reported Trfd. by Physicians	By Correspondence		By Addresses					
In State	Reporting	Reporting "Treating Hookworm"		No. Letters Mailed	No. Pieces Literature Distributed	Public		School		Special	
						Number	Atten-dance	Number	Atten-dance	Number	Atten-dance
3400	---	40	85	650	10,000	2	350	1	300	4	400

4) EXPENDITURES

Local Funds										Inter- national Health Comm.	TOTAL
Indirect						Direct					
STATE						STATE	COUNTY	From Other Sources			
Rent	Heat, Light &c.	Postage	Printing, Office	Sup's &c.							
\$15.	6.	30.	10.			-----	\$660.68	- -	\$4055.09	\$4715.77	

TEXAS

1) WORK OF FIELD DIRECTORS
a. Examinations

County	Field Director	Appropriated	Expended	Duration of Campaign							Examinations								
				Sec'g Appr'n	Advertising	Holding Disp's	Educational Wk.	School Work	Work in Homes	Total	Total Number	Total Positive	Positive to:						
													Uncinariasis	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	T. Saginata	T. Nana
Harrison	Outlaw	\$200.00	\$200.00	3	8	27				38	671	88	88						
Newton*	Judkins	200.00	200.00		8	26				34	1141	493	493						
Jackson	Thorne	300.00	152.40		8	43				51	737	102	102				3	2	9
Gregg	Outlaw	200.00	200.00	7	8	28				43	420	111	111						
Dallas	Judkins	300.00	300.00	7	8	18	17			50	1424	9	9						
Marion*	Thorne	100.00	100.00	7	8	34				49	588	311	311						
Total,		1300.00	1152.40	24	48	176	17			265	4981	1114	1114				3	2	9

*Appropriation by International Health Commission.

b. Treatments and Educational Work

County	Field Director	Number of Persons Treated										Educational					
		Treatments for Hookworm					Treatments for Other Parasites					Kind of Lectures					
		First	Second	Third	Fourth	Total	Ascariis	Hymenolepis	Trichoceph's	Oxyuris	T. Saginata	T. Nana	Total for Other Parasites	Public	School	Special	
Harrison	Outlaw	88	51	2		141								22	686	15	1639
Newton	Judkins	488	284	28		800								23	703	14	1140
Jackson	Thorne	106				106								4	142	23	1068
Gregg	Outlaw	111	46	8		165								16	363	12	1451
Dallas	Judkins	9	7			16								14	333	19	4760
Marion	Thorne	311	6	6	6	329								16	791	28	1620
Total,		1113	394	44	6	1557								95	3018	111	11678

c. Infection Survey

County	Surveyed By	Number Examined	Number Infected	Percent of Infection
Harrison	Outlaw	539	85	15.7
Newton	Judkins	856	419	48.9
Jackson	Thorne	584	90	15.4
Gregg	Outlaw	334	105	31.4
Dallas	Judkins	1364	8	.58
Marion	Thorne	463	276	59.6
Total,		4140	983	23.7

TEXAS (continued)4. Sanitary Survey

County	Surveyed By	Type of Privy							Sanitary Index
		A	B	C	D	E	F	Total	
Harrison	Outlaw	105					177	282	37.4
Newton	Judkins				24	196	93	313	8.17
Jackson	Thorne	4				1	307	312	1.3
Gregg	Outlaw	110					116	226	48.6
Dallas	Judkins	62			268	155		485	29.79
Marion	Thorne			31			247	278	5.5
Total,		281		31	292	352	940	1896	21.3

2) WORK OF STATE LABORATORY

	Total Specimens	Total Positive	Positive to									
			Hookworm	Ascaris	Hymenolepis	Trichocephalus	Oxyuris	Taenia Saginata	Taenia Nana			
Examinations for Our Staff*												
Examinations for Physicians and Miscellaneous	111	34	32						2			
Total Examinations	111	34	32						2			

*These are credited to counties from which they were sent in.

3) WORK OF CENTRAL OFFICE

ENLISTING PHYSICIANS				EDUCATIONAL							
Number of Physicians			No. Persons Reported Trtd. by Physicians	By Correspondence		By Addresses					
In State	Reporting	Reporting "Treating Hookworm"		No. Letters Mailed	No. Pieces Literature Distributed	Public		School		Special	
						Number	Attendance	Number	Attendance	Number	Attendance
5126	93	31	333	3435	13458	--	--	--	--	--	--

4) EXPENDITURES

Local Funds								Inter- national Health Comm.	TOTAL*
Indirect*					Direct				
STATE					STATE	COUNTY	From Other Sources		
Printing, Office Sup's &c.	Postage	Porter	Telegraph & Tele- phone	Rent					
\$112.72	\$40.60		64.85		----	\$852.40	--	\$5369.99	\$6222.39

*Indirect expenditures, including estimated state funds, are not added in total with direct expenditures.

Report on Work for the
RELIEF AND CONTROL OF UNCINARIASIS IN GRENADA
Quarter Ending March 31, 1915.

GRENADA.

1. Plan of Work and Extent of Operations. Measures against Uncinariasis in Grenada during the quarter ending March 31, 1915, centered in the attempt to eradicate the disease from three selected areas: one located at Mount Moritz, with an estimated population of 3,645 inhabitants; and two at St. David's (known respectively as Areas A and B), having a combined population estimated at 6,408 inhabitants. Actual work in these areas began on February 1st, and was conducted on the intensive plan, which requires:

- 1) Operation within a definite area;
- 2) The enumeration of the entire population in this area;
- 3) The microscopic examination of the entire population for Uncinariasis;
- 4) The treatment of all found infected with Uncinariasis;
- 5) The careful re-examination of every patient under treatment, after each weekly course of medicine, until a cure is effected.

2. Examinations and Treatments for Uncinariasis. During the quarter the work of examining and treating patients was conducted at the Central Laboratory or Head Office at Marine Villa, as well as locally at Mount Moritz and St. David's. The total number of persons microscopically examined was 7,906, of whom 3,440, or 43.5%, were found infected with Uncinariasis. First treatments were administered to 4,856 persons, of whom 14.1% were shown by re-examinations to be cured, and 85.9% remained under treatment. Table 1 gives detailed figures for each locality:

Table 1	TOTAL		Head Office		Areas			
					Mt. Moritz		St. David's	
	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.
1. Persons Seen	13260	----	3754	----	3397	----	6109	----
2. Persons Microscopically Examined for Uncinariasis	7906	59.8	1750	46.6	2500	73.6	3656	59.8
3. Persons Found Infected with Uncinariasis ..	3440	43.5	520	29.7	1050	42.0	1870	51.1
4. Persons Given First Treatment for Uncin- ariasis	4856	----	1285	----	1144	----	2427	----
5. Persons Cured of Uncinariasis	685	14.1	403	31.4	126	11.0	157	6.5
6. Persons Remaining Under Treatment for Uncinariasis	4170	85.9	882	68.6	1018	89.0	2270	93.5

3. Incidental Examinations: Carriacou and St. Andrews Estate. Examinations were also made of 41 persons on the Island of Carriacou, and of 100 laborers on the St. Andrews estate. The results are shown below:

a) Island of Carriacou:

	<u>Examined</u>	<u>Infected</u>
Prior to this quarter,	24	0
During this quarter,	41	1
Total,	65	1



b) St. Andrews Estate:

	<u>Examined</u>	<u>Infected</u>	<u>Treated</u>
During this quarter,	100	90	100

This infection of 90% on the St. Andrews estate is the most intense yet found in Grenada in a group of laborers not selected in any way. A certain amount of dyspepsia, anemia, and cardiac dilatation was recorded by clinical examination, but no gross disease was in evidence in spite of the obviously intense infection in practically all of those examined.

4. Microscopic Examinations for All Parasites. The comparative frequency of infection by various intestinal parasites, including Uncinaria, among 7,906 specimens examined, was found to be:

Ascaris,	71.6%
Trichuris,	63.0%
Uncinaria,	43.5%

The percentage of specimens positive to one or more parasites, was 90.6%; negative, 9.4%.

These results are exhibited in detail in Table 2:

Table 2	TOTAL		Head Office		Areas			
					Mt. Moritz		St. David's	
	No.	%	No.	%	No.	%	No.	%
1. Microscopic Examinations Made	7906	----	1750	----	2500	----	3656	----
2. Microscopic Examinations Positive to All Parasites	7162	90.6	1373	78.5	2315	92.6	3473	95.0
3. Specimens Examined for Uncinaria Disclosing Incidentally the Presence of Other Intestinal Parasitic Infection:								
(a) Ascaris	5559	71.6	1227	70.1	1800	72.0	2632	72.0
(b) Trichuris	4982	63.0	1285	73.4	1786	71.4	1911	52.3
(c) Uncinaria	3440	43.5	520	29.7	1050	42.0	1870	51.1
(d) Strongyloides	61	.8	3	.2	8	.3	50	1.4
(e) Oxyuris	46	.6	4	.2	12	.5	30	1.0
(f) Larvae of Muscidae	2	.03	1	.06	--	---	1	.03
4. Microscopic Examinations Negative to All Parasites	744	9.4	377	21.5	184	7.4	183	5.0

5. Subsequent Treatments for Uncinariasis. The number of patients given one treatment was 4,856. Of these, 52.0% received the second treatment; 33.1% the third; and 13.1% four or more treatments. The progress made during the quarter in following up the first treatment with other treatments until a cure was effected, is exhibited in Table 3.

Table 3	TOTAL		Head Office		A r e a s			
					Mt. Moritz		St. David's	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Persons Treated for Uncinariasis:								
(a) One treatment	4856	----	1285	----	1144	----	2427	----
(b) Two treatments	2526	52.0	677	52.7	766	67.0	1083	44.6
(c) Three treatments	1605	33.1	353	27.5	697	60.9	555	22.9
(d) Four or more treatments	637	13.1	193	15.0	134	11.7	310	12.8
(e) Total number of treatments	9624	----	2508	----	2741	----	4375	----

6. Laboratory and Educational Work. Table 4 gives the results of fecal and blood examinations in the laboratory; and shows the progress made in aiding the general public to understand Uncinariasis and the measures necessary for controlling it:

Table 4	
1. Laboratory Work:	
(A) Fecal Examinations.	Number
(a) No. of specimens examined,	12431
(b) No. of specimens positive to all parasites,	11065
(c) No. of specimens positive to Uncinaria,	4975
(B) Blood Examinations.	
(a) No. of specimens examined,	172
(b) Average percentage haemoglobin,	70.0
(c) Minimum percentage haemoglobin,	30.0
(d) Maximum percentage haemoglobin,	90.0
2. Educational Work:	
(a) Number of addresses delivered,	109
(b) Attendance,	14119

7. Cooperation of Public Officials and Teachers. The cooperation of public officials and school-teachers has been very promising. In February a public lecture on "The Economic Aspects of Disease" was delivered in St. George's by the Medical Officer in Charge. His Excellency the Governor presided at this meeting, and spoke in general of sanitary conditions in Grenada, and in particular of the campaign against Uncinariasis.

The schools are the main centers around which districts are marked off and the census taken. Teachers have been selected as part-time assistants, for taking the census; collecting specimens; distributing medicines and literature; and for general educative and recording work. The teachers have shown a very marked and intelligent interest in the work, and have come regularly to the Head Office at Marine Villa from long distances to attend the lectures on health topics arranged for them and for the sanitary inspectors of the Island.

8. Preventive Measures. Efforts are being made to secure the amendment of existing sanitary laws in such manner as will serve best to give permanence to the results obtained

by the treatment and cure of infected persons. It has been recommended:

- 1) That the pollution of the soil and streams be prohibited, under penalty for violation;
- 2) That the disposal of fecal matter be carried out:
 - (a) by burial, as in a pit privy;
 - (b) by combustion; or,
 - (c) by disposal in the sea in certain designated locations; and
- 3) That a corps of sanitary inspectors, entirely distinct from the staff engaged in examining and treating, be employed to report nuisances and to aid in carrying out the sanitary requirements.

9. Conditions of Uncinaria Infection. Dr. Angus MacDonald, the Medical Officer in Charge, has drawn the following conclusions based on his work to date:

"1) Age. All ages are infected, but, except in definite districts, infection is uncommon under ten years and rare under five.

"2) Sex. Adult males are infected in greatest number.

"3) Occupation. Practically all are or have been engaged in agricultural pursuits (barefoot); and infection seems to date from leaving the home garden to work elsewhere.

"4) Situation. Infection varies widely between different districts, chiefly the result of difference of soil, cultivation, and perhaps of water supply. Infection in the town is low; and in all cases of town infection the patient has resided in the country at periods ranging as high as twelve years previously.

"5) Soil. The red clay bears a high infection; while also a high infection is found in definite districts on light, ashy, or sandy soil, over 'tiff', conglomerate, and tough basalt.

"6) Meteorology. The more moist windward side of the Island probably carries a higher infection.

"7) Cultivation. The densely cacao-shaded areas have a high percentage; open cultivation of recurrent or rotation crops (corn, peas, tannia, potato, etc.) in definite districts also bears a high infection.

"8) Complicating Diseases. From casual blood examinations it is evident that Malaria is widespread in the Island and is responsible for much morbidity. The comparative debilitating influence of the Ankylostome and Malaria parasites will be discussed in a later report.

"9) Water Supply. The water supply is mainly from streams and springs. In one definite district the supply is from ponds. This district bears a high hookworm infection and a high Malaria infection. The nature of soil and cultivation suggest little chance of soil infection. I have examined samples of water from four ponds in this district. The water of all is grossly polluted. There is suggestion of possible water infection which would explain the contradictory conditions enumerated above under 1, 4, 5, and 6."

Report on Work for the

RELIEF AND CONTROL OF UNCINARIASIS IN COSTA RICA

Quarter Ending March 31, 1915.

COSTA RICA.

1. Plan of Work. Work in Costa Rica during the quarter ending March 31, 1915, was conducted on the dispensary plan.

2. Extent of Operations. Dispensaries for the free diagnosis and treatment of Uncinariasis were held in the following localities:

Province	Canton	Districts
Puntarenas	Puntarenas	Paquera and Tambor; Lepanto and Corozal; Miramar, LaUnion, and Barranca; Chomes; Manzanillo; LaPitahaya, Aranjuez, and Acaloupe.
Puntarenas	Esparta	City of Esparta, Marañonal, Juanilama, and San Jose Chiquito; San Rafael, San Juan Grande, and El Baron; San Jeronimo, Macacona, Los Nances, and Paires.
San Jose	Puriscal	Barbacoas; Desamparaditos; Crifo Alto; Crifo Bajo; Jicaral; San Antonio.
Alajuela	Atenas	Mercedes; Jesus; San Isidro.

The laboratories in the Cantons of Puntarenas, Puriscal, and Atenas were operated continuously during the quarter; those in the Canton of Esparta, which had been in operation since November 3, 1914, were closed on February 27, 1915. A special report on the work in Esparta has been prepared, from which the following brief summary is taken:

RESULTS IN CANTON OF ESPARTA

	Number	Percentage
1. Census	5267	----
2. Persons Microscopically Examined for Uncinariasis	3469	65.9
3. Persons Found Infected with Uncinariasis .	3194	92.1
4. Persons Treated for Uncinariasis	2034	63.7
5. Persons Cured of Uncinariasis *	132	6.4

*It is the custom to administer from one to six treatments. These treatments generally produce cures. For determining positively which cases have been cured, a microscopic re-examination is required from two to eight weeks after treatment. Often this re-examination cannot be made. Consequently, the number of persons recorded as positively cured is reduced.

I. WORK OF THE FIELD STAFF.

1. Examinations and Treatments for Uncinariasis. A total of 10,594 persons, or 24.8% of the entire population, was examined for Uncinariasis in the four cantons where work was under way during the quarter. It was found that 84.6% of those examined were infected with Uncinariasis. Treatment was administered to 72.7% of those infected, and 7.2% of those treated were shown by microscopic re-examination to be cured. The figures in detail for each canton are given in Table 1:

Table 1.	TOTAL		Puntarenas Province				San Jose Province		Alajuela Province	
			Puntarenas		Esparta		Puriscal		Atenas	
	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.
1. Census	42794	----	15867	----	5267	----	13004	----	8656	----
2. Persons Microscopically Examined for Uncinariasis	10594	24.8	2569	16.2	2081	39.5	2658	20.4	3286	37.9
3. Persons Found Infected with Uncinariasis	8962	84.6	2142	83.4	2005	96.3	2239	84.2	2476	75.3
4. Persons Given First Treatment for Uncinariasis	6515	72.7	1584	74.0	1034	51.6	2188	97.7	1709	69.0
5. Persons Cured of Uncinariasis*	466	7.2								

2. Per Capita Cost of Examining and Treating for Uncinariasis. For securing these results, \$4,262.94** was expended during the quarter by the International Health Commission and the Costa Rican government combined. This gives the following as the per capita cost of examining and treating for Uncinariasis:

Cost per person examined, \$.40
 Cost per person treated,65

3. Subsequent Treatments for Uncinariasis. The laboratory examines and treats as many persons as possible during its first visit to a district. It moves then to an adjoining district, and returns in two weeks to administer second, third, and subsequent treatments. Of the 6,515 persons given first treatments during the quarter, the record shows that 61.7% received two treatments; 11.1% three; and 2.8% four. The figures for each district are exhibited in Table 2:

*See foot-note, page 1.

**Approximate.



Table 2	TOTAL		Puntarenas Province				San Jose Province		Alajuela Province	
			Puntarenas		Esparta		Puriscal		Atenas	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Persons Treated for Uncinariasis:										
(a) One treatment	6515	----	1584	----	1034	----	2188	----	1709	----
(b) Two "	4021	61.7	1489	94.0	1010	97.7	774	35.4	748	43.8
(c) Three "	723	11.1	307	19.4	95	9.2	305	13.9	16	.9
(d) Four "	182	2.8	24	1.5	55	5.3	102	4.7	1	.06
(e) Five "	9	.1	3	.2	24	2.3	2	.1	--	----
(f) Six "	6	.1	--	--	6	.6	--	--	--	----
(g) Seven "	6	.1	--	--	6	.6	--	--	--	----
(h) Total number of treatments	11482	----	3407	----	2230	----	3371	----	2474	----

4. Comparative Degree of Infection Between Persons of School Age and Those of All Ages.

The microscopic examination of 3,692 school children between the ages of 6-18 years showed 90.0% of them to be infected with Uncinariasis. Among 10,594 persons of all ages, the percentage of infection was 84.6%. This greater degree of infection among school children is shown for each district in Table 3:

Table 3	TOTAL		Puntarenas Province				San Jose Province		Alajuela Province	
			Puntarenas		Esparta		Puriscal		Atenas	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Children Microscopically Examined for Uncinariasis	3692	----	806	----	387	----	1278	----	1221	----
2. Children Found Infected with Uncinariasis	3324	90.0	757	93.9	379	97.9	1190	93.1	998	81.7
3. Persons of All Ages Microscopically Examined for Uncinariasis	10594	----	2569	----	2081	----	2658	----	3286	----
4. Persons of All Ages Found Infected with Uncinariasis	8962	84.6	2142	83.4	2005	96.3	2239	84.2	2476	75.3

5. Degree of Infection with Uncinariasis, By Races. Table 4 compares by races the

infection with Uncinariasis. It will be observed that 99.9% of the specimens examined were from the white and brown races combined. The results showed a higher rate of infection among the brown than among the white race, the percentage for each being: Brown race, 87.4%. white race, 77.0%.

Table 4	TOTAL		Puntarenas Province				San Jose Province		Alajuela Province	
			Puntarenas		Espartero		Puriscal		Atenas	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Persons Microscopically Examined for Uncinariasis	9983	----	3088	----	2082	----	2658	----	2155	----
2. Persons Found Infected with Uncinariasis	8345	83.6	2486	80.5	2005	96.3	2239	84.2	1615	74.9
3. Persons Microscopically Examined for Uncinariasis and Persons Found Infected with Uncinariasis, By Races:										
(a) White Race Examined	3582	----	1375	----	69	----	151	----	1987	----
Infected	2757	77.0	1059	77.0	66	95.7	148	98.0	1484	74.7
(b) Brown Race Examined	6390	----	1704	----	2011	----	2507	----	168	----
Infected	5584	87.4	1423	83.5	1939	96.4	2091	83.4	131	78.0
(c) Negro Race Examined	6	----	5	----	1	----	0	----	0	----
Infected	4	66.6	4	80.0	0	0.0	0	0.0	0	0.0
(d) Unclassified Examined	5	----	4	----	1	----	0	----	0	----
Infected	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

6. Infection with Parasites Other Than Uncinaria. The percentage of infection with parasites other than Uncinaria, among the 10,594 specimens microscopically examined, is shown in Table 5. Infection with Uncinaria was most common, this parasite being present in 84.6% of the specimens examined; Trichocephalus and Ascaris following in the order named with 58.0% and 49.8%, respectively:

Table 5	Number	Percentage
1. Total number of specimens examined	10594	----
2. Infected with Uncinaria,	8962	84.6
3. Infected with Trichocephalus	6150	58.0
4. Infected with Ascaris,	5273	49.8
5. Infected with Strongyloides,	206	1.9
6. Infected with Taenia,	56	.5
7. Infected with Amoeba,	18	.2

7. Anemia of Infected Persons. (a) Clinical Examinations. Record was kept of the clinical appearance of 5,936 persons infected with Uncinariasis. By far the larger proportion (84.6%) of these presented evidence of only a moderate anemia. The persons slightly anemic were 13.1% of the whole; those severely anemic, only 2.3%:

Table 6	Number	Percentage
1. Persons Clinically Examined	5936	----
2. Persons Slightly Anemic,	778	13.1
3. Persons Moderately Anemic,	5020	84.6
4. Persons Severely Anemic,	138	2.3

(b) Blood Examinations. Blood tests of specimens taken from 643 infected persons revealed an average haemoglobin index of 46.6%. Table 7 shows that more than half (56.0%) of those examined had an average haemoglobin ranging from 30 to 50%:

Table 7		
Average percentage haemoglobin, 46.6%		
Average Haemoglobin	Number of Specimens	Percentage of Total Specimens
0-10%	12	1.9
10-30%	23	3.6
30-50%	360	56.0
50-70%	216	33.4
70-90%	31	5.0
90-100%	1 .....	.1
	643	

8. Educational Work. Coincidentally with the work of examining and treating for Uncin-
ariasis, the staff has carried on educational propaganda to assist in the relief and control
of the disease in those districts where laboratories were established. Statistics show
that 1,219 lectures of various kinds were delivered by the staff during the quarter, and
that these lectures were attended by approximately 18,551 persons. The number of lectures
delivered and the average attendance at each, for the various districts, are given in Table 8:

Table 8	TOTAL		Puntarenas Province				San Jose Province		Alajuela Province	
			Puntarenas		Espartero		Puriscal		Atenas	
	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average
1. Addresses of All Kinds:										
(a) Number	1219	----	615	----	68	----	443	----	93	----
(b) Attendance*	18551	15	8160	13	1180	17	5284	12	3927	42
2. Public Addresses:										
(a) Number	29	----	22	----	1	----	4	----	2	----
(b) Attendance*	3214	111	2185	99	80	80	524	131	425	213
3. School Addresses:										
(a) Number	14	----	3	----	0	----	3	----	8	----
(b) Attendance*	748	53	104	35	0	----	296	99	348	44
4. Special Addresses:										
(a) Number	1176	----	590	----	67	----	436	----	83	----
(b) Attendance*	14589	12	5871	10	1100	16	4464	10	3154	38

9. Preventive Measures. Hearty support is being given by the government to the movement
for the construction of improved privies. The Minister of Government and Police has

* Estimated; not by actual count.

instructed that all householders be required to provide their premises with privies of a type approved by the Uncinariasis Department. In the case of persons too poor themselves to pay for the construction of the privies, the government will have the privies erected at the expense of the municipality.

Sanitary surveys are made and every effort directed toward sanitary improvement, while the laboratories are working in a particular district. In this way it is hoped to have the measures of prevention proceed hand in hand with those of treatment and cure, and so give permanence to the results obtained. Table 9 indicates the sanitary improvement during the quarter for each district:

Table 9.								
Province	District	Inspection	Type of Privy					
			A ¹	B ²	C ³	D ⁴	E ⁵	F ⁶
Total		First					15	397
		Last	95	170	295			
Puntarenas	Puntarenas	First					15	282
		Last	26	77	181			
Puntarenas	Esparta	First						
		Last	69	90	91			
San Jose	Puriscal	First						
		Last		3	23			
Alajuela	Atenas	First						115
		Last						

II. WORK OF THE CENTRAL OFFICE.

1. Nature and Extent of Central Office Activities. The work of the central office is primarily educational, and consists largely in securing the interest and cooperation of government officials, physicians, school-teachers, and the general public in measures directed against Uncinariasis. Table 10 shows what was done by the central office during the quarter in (1) educational work; (2) enlisting the support of physicians; and (3) examining and treating for Uncinariasis:

KEY: 1. Pit privy, fly-proof.
 2. Pit privy, with seat.
 3. Pit privy, housed.
 4. Privy with pit.
 5. Privy without pit.
 6. No privy.

Table 10

1. Educational Work:		Number
A. By Correspondence:		
(a) Number of letters mailed,		297
(b) Number of pieces of literature distributed,		1608
B. By Addresses:		
(a) Total number of addresses delivered,		12
(b) Total attendance upon all addresses delivered,		1909
(c) Number of public addresses delivered,		10
(d) Attendance upon public addresses delivered,		1775
(e) Number of school addresses delivered,		1
(f) Attendance upon school addresses delivered,		59
(g) Number of special addresses delivered,		1
(h) Attendance upon special addresses delivered,		75
2. Enlisting the Physicians:		
(a) Number of physicians in Costa Rica,		101
(b) Number of physicians in Costa Rica, reporting		18
(c) Number of physicians in Costa Rica reporting that they are treating Uncinariasis,		11
(d) Number of persons reported examined for Uncinariasis by physicians and hospitals in Costa Rica,		1378
(e) Number of persons found infected with Uncinariasis by physicians and hospitals in Costa Rica,		491
(f) Number of persons treated for Uncinariasis by physicians and hospitals in Costa Rica,		393
3. Examining and Treating for Uncinariasis:		
(a) Number of persons examined for Uncinariasis,		9
(b) Number of persons found infected with Uncinariasis,		8
(c) Number of persons treated for Uncinariasis,		8

2. Support of the Government. Governors and Police Heads have been instructed by the government to assist in every manner possible the work of the Uncinariasis Department. These authorities cooperate by furnishing a census and sanitary survey of each district as it is worked; and render invaluable assistance to the Department in compelling such sanitary improvements in each district as seem necessary to safeguard the results obtained by the examination, treatment, and cure of infected persons.

Evidence of genuine interest upon the part of the government is reflected in the following table. Of a total expenditure during the quarter of \$4,262.94, approximately \$870.00, or 20.4%, was contributed by the local government; and \$3,392.94, or 79.6%, by the International Health Commission.

Total amount expended during quarter,	\$4,262.94*
Contributed by the International Health Commission,	3,392.94
Contributed by the Costa Rican government,	870.00*

* Approximate.

The amount expended by the local government is itemized below:

Total,	\$870.00*
Light and telephone,	10.00
Office rent,	100.00
Postage frank,	60.00*
Telegraph frank,	15.00*
Printing,	425.00
Freight frank,	60.00*
Transportation,	200.00

3. Support of the Teachers. The Minister of Public Instruction and his officials have grasped the value of a systematic and intensive campaign in preventive medicine. They have authorized the Uncinariasis Department to publish, at the expense of the School Department, whatever literature is necessary for the instruction of pupils in this subject. One half-hour each week, the day and time to be uniform throughout the Republic, has been set aside for the instruction of pupils from the literature furnished. The teachers also have been instructed to attend all conferences held in their districts by the Uncinariasis Department, whether for the teachers especially or for the public generally; and to include, as part of their duties, cooperation with the Uncinariasis Department by bringing its work to the attention of councillors of the Board of Education in their respective districts, and by urging upon the parents of their pupils the importance of the examination and treatment of Uncinariasis, and the construction of improved privies.

* Approximate.

Report on Work for the

RELIEF AND CONTROL OF UNCINARIASIS IN GUATEMALA

Quarter Ending March 31, 1915.

GUATEMALA.

1. Inauguration of Work. Measures for the relief and control of Uncinariasis in Guatemala were formally inaugurated during the quarter ending March 31, 1915. The Pacayal and Las Marias estates were selected for preliminary operations. These two estates are situated, respectively, in the provinces of Chimaltenango and Santa Rosa, at distances of 114 miles and 50 miles from Guatemala City. Work on the Pacayal estate was begun on March 15th; on Las Marias, March 22nd.

2. Plan of Work. In securing specimens for examination and in administering treatment in Guatemala, it is necessary to go from house to house and to come in personal contact with the inhabitants. This is because the directions for taking the treatment can neither be read nor followed, if read. This method of dealing individually with the patients makes the results seem smaller in comparison with countries or localities where this individual attention is not required.

3. Examinations and Treatments for Uncinariasis. In the brief period of two weeks during which the work was in progress, the total number of persons examined for Uncinariasis was 1,194, of whom 450, or 37.7%, were found infected. Religious exercises during Holy Week prevented the treatment of a great many of the infected persons. However, first treatments were administered to 134 persons, or 29.8% of those infected. Table 1 itemizes the results for each estate:

Table 1	TOTAL		E S T A T E			
			Pacayal		Las Marias	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Families Visited	360	----	217	----	143	----
2. Persons Visited	1451	-----	837	----	614	----
3. Persons Microscopically Examined for Uncinariasis	1194	82.3	837	100.0	357	58.1
4. Persons Found Infected with Uncinariasis	450	37.7	198	23.7	252	70.6
5. Persons Given First Treatments for Uncinariasis	134	29.8	134	67.7	---	----

4. Infection with Parasites Other Than Uncinaria. Microscopic examinations for intestinal parasites other than Uncinaria were carried on simultaneously with the routine examinations for Uncinaria. It was found that 90.2% of the 1,194 specimens examined were positive to at least one parasitic infection, Ascaris being present in 74.7% of the specimens; Uncinaria in 37.7%; and Trichocephalus in 34.3%. The results are exhibited in detail in Table 2:

Table 2	TOTAL		E S T A T E			
			Pacayal		Las Marias	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Microscopic Examinations for Uncinariasis	1194	----	837	----	357	----
2. Microscopic Examinations Positive to Uncinariasis..	450	37.7	198	23.7	252	70.6
3. Microscopic Examinations Positive:						
(a) To all parasites	1077	90.2	728	87.0	349	97.8
(b) To Ascaris	892	74.7	667	79.7	225	63.0
(c) To Uncinaria	450	37.7	198	23.7	252	70.6
(d) To Trichocephalus	409	34.3	342	40.9	67	18.8
(e) To Taenia	13	1.1	11	1.3	2	.6
(f) To Strongloides	12	1.0	3	.4	9	2.5
(g) To Oxvuris	5	.4	--	---	5	1.4
4. Microscopic Examinations Negative	117	9.8	109	13.0	8	2.2

5. Extending the Work. The prospects for the success of the work in Guatemala are reported to be very gratifying. The cooperation of public officials, the medical profession, and the public has been most encouraging. Requests for the work already have been received from a great many estates: more than enough to engage the present force for some months ahead. These requests have been wholly unsolicited; and have been accompanied by offers of cooperation on the part of the estate-owners to the extent of providing food, lodging, and conveyances for the staff, and constructing improved privies.

6. Preventive Measures. Privies of the pit type are being recommended for preventing the further spread of infection. Prospects for installing these privies at every house on the Pacayal and Las Marias estates are considered good. Up to date, ten pit privies have been built. The results for this feature of the work are exhibited below:

No. of houses on estates,	371
No. having privies at start of work,	3
No. constructing privies since work began,	10
No. of houses having privies,	13 ... 13
No. of houses without privies,	358



Report on Work for the
RELIEF AND CONTROL OF UNGINARIASIS IN PANAMA
Quarter Ending March 31, 1915.

PANAMA.

1. Plan of Work. Measures against Uncinariasis in Panama are conducted on the dispensary plan. Dispensaries are established at convenient locations, to which the inhabitants are invited to come for free diagnosis and treatment. The sparsity of the population and the primitive modes of travel throughout the country, render it impracticable to conduct the work on a more intensive plan by visiting the people in their homes to secure specimens for examination and to administer treatment.

2. Extent of Operations. During the quarter ending March 31, 1915, dispensaries were operated in the following localities:

<u>Province</u>	<u>District</u>	<u>Towns</u>
Panama	Panama	Panama Juan Diaz
	Taboga	Taboga Otoque
	Arraijan	Arraijan Paja
	Capira	Capira Cermenó La Campana Potrero
	Chame	Chame Sora Cabuya Neuva Gorgona Bejuco
Bocas	Bocas	Bocas del Toro Bastimentos Chiriqui Grande
Cocle	Penonome	Penonome

The laboratories in the districts of Taboga, Chame, and Penonome were first opened during this quarter; those in the districts of Panama, Arraijan, Capira, and Bocas were continued in operation from the last quarter.

3. Examinations and Treatments for Uncinariasis. The total number of persons microscopically examined for Uncinariasis in these seven districts during the quarter, was 4,489. Of these, 2,968, or 66.1 per cent., were found infected; and 2,653, or 89.4 per cent., of those infected were treated. The remaining 315 persons (11.6 per cent. of those infected) were not treated either on medical grounds, because they refused the medicine, or because they could not be located after examination.

Persons who were treated were encouraged to submit specimens for re-examination, to ascertain



definitely whether or not a cure had been effected. The number of persons who did submit specimens for microscopic re-examination, after taking treatment, was 332, or 12.5 per cent. of the total number of persons treated. The re-examinations showed that only 20, or but 6.0 per cent. of the persons submitting specimens for re-examination, were still infected with Uncinariasis, the remaining 312, or 94.0 per cent., having been cured.

Table 1 gives by districts the results for this feature of the work:

Table 1	TOTAL		Province of Panama										Bocas Province		Cocle Province	
			Panama		Taboga		Arraijan		Capira		Chame		Bocas		Penonome	
	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.
1. Persons Microscopically Examined for Uncinariasis	4489	----	409	----	992	----	48	----	30	----	1227	----	1183	----	600	----
2. Persons Found Infected with Uncinariasis	2968	66.1	240	58.6	538	54.2	24	50.0	24	80.0	955	77.8	785	66.4	402	67.0
3. Persons Given First Treatments for Uncinariasis	2653	89.4	225	93.8	516	95.9	19	79.2	25	----	828	86.7	723	92.1	317	78.9
4. Persons Microscopically Re-Examined for Uncinariasis ...	332	12.5	14	6.2	318	61.6										
5. Persons Found Infected with Uncinariasis upon Re-examination	20	6.0	3	21.4	17	5.3										
6. Persons Cured of Uncinariasis*	312	94.0	11	78.6	301	94.7										

4. Per Capita Cost of Examining and Treating for Uncinariasis. The amount expended in Panama during the quarter for examining these 4,489 and treating these 2,653 persons, was \$3,906.39. From this the per capita cost of examinations and treatments is found to be:

Cost per person examined, \$.87
Cost per person treated, \$1.47

5. Subsequent Treatments for Uncinariasis. It has been seen that first treatments were given to 2,653, or 89.4 per cent., of the 2,968 persons found infected. All of those who received the first were urged to return for the second and ensuing treatments until cured. Table 2 shows that 65.8 per cent. of the persons given first treatments also received the

* It is the custom to administer from one to six treatments. These treatments generally produce cures. For determining positively which cases have been cured, a microscopic re-examination is required from two to eight weeks after treatment. This re-examination often cannot be made. Consequently, the number of persons recorded as cured is reduced.



second; but that only 46, or 1.7 per cent., returned for subsequent treatments.

Table 2	TOTAL		Province of Panama										Bocas Province		Cocle Province	
			Panama		Taboga		Arraijan		Capira		Chame		Bocas		Penonome	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Persons Treated for Uncinariasis:																
(a) One treatment ..	2653	----	225	----	516	----	19	----	25	----	828	----	723	----	317	----
(b) Two treatments..	1745	65.8	106	47.1	263	51.0	255	----	309	----	182	22.0	594	82.2	36	11.4
(c) Three treatments	44	1.7	3	1.3	18	3.5	17	----	1	----	1	.1	4	.6	--	----
(d) Four treatments	2	.08					1	----		----			1	.1		
(e) Total treatments	4444	----	334	----	797	----	292	----	335	----	1011	----	1322	----	353	----

6. Infection with Parasites Other Than Uncinaria. A large proportion of the specimens submitted for examination for Uncinaria, disclosed incidentally the presence of other intestinal parasitic infection. Ascaris and Trichocephalus were found to be very common, their percentages, in comparison with Uncinaria, being:

Uncinaria, 66.1%
 Ascaris, 38.4%
 Trichocephalus, 32.5%

The percentages for these and other parasites, by districts, are given in Table 3:

Table 3	TOTAL		Province of Panama										Bocas Province		Cocle Province	
			Panama		Taboga		Arraijan		Capira		Chame		Bocas		Penonome	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Specimens Examined for Uncinariasis	4489	----	409	----	992	----	48	----	30	----	1227	----	1183	----	600	----
2. Specimens Positive to Uncinariasis	2968	66.1	240	58.6	538	54.2	24	50.0	24	80.0	955	77.8	785	66.4	402	67.0
3. Specimens Examined for Uncinariasis Disclosing Incidentally the Presence of Other Intestinal Parasitic Infection:																
(a) Ascaris	1719	38.4	40	9.7	672	67.7	18	37.5	5	16.7	220	17.9	472	39.9	292	48.7
(b) Trichocephalus	1461	32.5	62	15.2	645	65.0	11	22.9	3	10.0	77	6.3	562	47.5	101	16.8
(c) Strongyloides..	203	4.5	25	6.1	32	3.2	2	4.2	1	3.3	26	2.1	91	7.7	26	4.3
(d) Ameba	1	.02			1	.1										
(e) Unidentified...	1	.02											1	.1		

7. Treatments for Parasites Other Than Uncinaria. In a few cases, treatments for Ascaris and Ameba were administered. Table 4 shows, however, that these amounted only to 4.0 per cent.

of the table number of treatments given:

Table 4	TOTAL		Province of Panama										Bocas Province		Cocle Province	
			Panama		Taboga		Arraijan		Capira		Chame		Bocas		Penonome	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Treatments Administered:																
(a) For all parasites..	4619	----	334	----	926	----	292	----	335	----	1020	----	1329	----	383	----
(b) For Uncinariasis...	4444	96.2	334	100.	797	86.1	292	100.	335	100.	1011	99.1	1322	99.5	353	92.2
(c) For Ascaris	174	3.8			129	13.9					9	.9	6	.5	30	7.8
(d) For Ameba	1	.02											1	.1		

8. Comparative Degree of Infection With Uncinariasis Between Persons of School Age and Those of All Ages. Table 5 gives by districts a comparison of the infection with Uncinariasis between persons of school age (6-18 years) and those of all ages. It shows that the percentage of persons of school age infected was 75.7 per cent., against a percentage of 66.1 for persons of all ages:

Table 5	TOTAL		Province of Panama										Bocas Province		Cocle Province	
			Panama		Taboga		Arraijan		Capira		Chame		Bocas		Penonome	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Children Microscopically Examined for Uncinariasis	1651	----	169	----	402	----	19	----	12	----	405	----	404	----	240	----
2. Children Found Infected with Uncinariasis	1249	75.7	95	56.2	259	64.4	9	47.4	10	83.3	342	84.4	334	82.7	200	83.3
3. Persons of All Ages Microscopically Examined for Uncinariasis	4489	----	409	----	992	----	48	----	30	----	1227	----	1183	----	600	----
4. Persons of All Ages Found Infected with Uncinariasis	2968	66.1	240	58.6	538	54.2	24	50.0	24	80.0	955	77.8	785	66.4	402	67.0

9. Degree of Infection with Uncinariasis, By Races. Table 6 compares by races the infection with Uncinariasis. Two columns of figures are given, the first presenting those for the period from the start of the work up to March 31, 1915 inclusive; and the second, those for the first quarter of 1915 only. Perhaps for purposes of comparison the former are more reliable.

Out of 9,810 specimens examined up to March 31, 1915, 8,725, or 88.9 per cent. of the whole, were furnished by members of the brown and negro races: 6,557, or 66.8 per cent. of the whole, having been furnished by members of the brown, and 2,168, or 22.1 per cent. of the whole, by members of the negro race. Among these 8,725 specimens, the percentage of infection was found to be:

Brown race, 68.8%
 Negro race, 44.6%

The white race also furnished 631 specimens for examination; the Indian, 56; and the Chinese, 36: a total for these three races of but 723, or 7.4 per cent. of the 9,810 specimens examined.

The percentages of infection among them were:

Indian race, 76.8%
 Chinese race, 38.9%
 White race, 35.0%

It is possible, however, that not enough specimens have been examined from members of the white, Indian, and Chinese races to afford a correct idea of their relative degree of infection in comparison with members of the brown and Negro races:

Table 6		Total Since Work Began		Total For This Quarter	
		No.	P. C.	No.	P. C.
1. Persons Microscopically Examined for Uncinariasis ...		9810	----	4489	----
2. Persons Found Infected with Uncinariasis		5875	59.9	2968	66.1
3. Persons Microscopically Examined for Uncinariasis and Persons Found Infected with Uncinariasis, by Races:					
(a) Indian race	Examined	56	----	26	----
	Infected	43	76.8	22	84.6
(b) Brown race	Examined	6557	----	3271	----
	Infected	4510	68.8	2264	67.2
(c) Negro race	Examined	2168	----	836	----
	Infected	967	44.6	514	61.5
(d) Chinese race	Examined	36	----	11	----
	Infected	14	38.9	7	63.6
(e) White race	Examined	631	----	342	----
	Infected	221	35.0	160	46.8
(f) Unclassi- fied	Examined	362	----	3	----
	Infected	120	33.1	1	33.3

10. Index of Anemia. Some idea of the anemia of persons residing in the various districts is furnished by the blood examinations of 1,408 persons taken at random, without reference to the presence of Uncinaria infection. The results of these examinations are summarized in Table 7. The average percentage of haemoglobin was found to be 59.2 per cent., or 41.5 per cent. below the normal:

Table 7

Average Percentage Haemoglobin, 59.2%

	TOTAL		Province of Panama						Bocas Province		Cocle Province	
			Panama		Taboga		Chame		Bocas		Penonome	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Total haemoglobin tests made	1408	---	4	---	187	---	297	---	618	---	302	---
2. Average haemoglobin:												
0-10%	1	.07							1	.2		
10-30%	16	1.1			1	.5	2	.6	10	1.6	3	1.0
30-50%	192	13.6	2	50.0	31	16.6	16	5.4	115	18.6	28	9.3
50-70%	1028	73.0	2	50.0	135	72.2	270	90.9	442	71.5	179	59.3
70-90%	171	12.1			20	10.7	9	3.0	50	8.1	92	30.5
90-100%												

11. Educating the People: By Addresses. The staff lectures on the causes and effects, and the methods of relieving and controlling Uncinariasis, in each district where the laboratories are located. The addresses are of three kinds: (a) house-to-house, or individual; (b) to schools; and (c) to the general public. Table 8 exhibits, for each district, the number of lectures delivered and the average attendance at each:

	TOTAL		Province of Panama								Bocas Province		Cocle Province	
			Panama		Taboga		Arraijan		Chame		Bocas		Penonome	
	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average	No.	Average
1. <u>Lectures of All Kinds</u>														
(a) Number	1737	---	143	---	414	---	---	---	771	---	197	---	212	---
(b) Attendance	6745	4	358	3	1575	4	325	---	2397	3	826	4	1264	6
2. <u>House-to-house (or Individual) Lectures:</u>														
(a) Number	1726	---	143	---	414	---	---	---	770	---	189	---	210	---
(b) Attendance	5891	3	358	3	1575	4	325	---	2097	3	553	3	983	5
3. <u>School Lectures:</u>														
(a) Number	2	---									2	---		
(b) Attendance	62	31									62	31		
4. <u>Public Lectures:</u>														
(a) Number	9	---							1	---	6	---	2	---
(b) Attendance	792	88							300	300	211	35	281	140

12. Educating the People: By Literature. An extensive distribution of literature on the subject of Uncinariasis also is carried on by the staff in the field, and by the central office. A total of 2,248 pieces of literature was distributed during the quarter. The number of pieces for each district is given in Table 9:

Table 9	TOTAL	Province of Panama					Bocas Province	Cocle Province
		Panama	Taboga	Arraijan	Capira	Chame	Bocas	Penonome
1. Pieces Literature Distributed ..	2248	202	575	25		450	352	644
(a) Letters	17	17						
(b) Posters	175		75			50		50
(c) Booklets	37	10					27	
(d) Leaflets	2019	175	500	25		400	325	594

13. Work of Other Agencies. Examinations and Treatments for Uncinariasis are carried on also by the Santo Tomas Hospital, at Panama, in the province of Panama; and by the United Fruit Company, at Bocas del Toro, in the province of Bocas del Toro. The results are summarized in

Table 10.	TOTAL		Santo Tomas Hospital		United Fruit Company	
	No.	P.	No.	P.	No.	P.
1. Persons Microscopically Examined for Uncinariasis	1533	----	1242	----	291	----
2. Persons Found Infected with Uncinariasis	262	17.1	222	17.9	40	13.7
3. Persons Treated for Uncinariasis:						
(a) Total treatments,	240	91.6	200	90.1	40	100.
(b) First treatments,	---	---	---	---	---	---
(c) Subsequent treatments,	---	---	---	---	---	---

14. Preventive Measures. The progress made in measures for the prevention of Uncinariasis has not been as gratifying as in those for its relief. For sanitary reform, it is necessary to rely upon the voluntary cooperation of the people; and it is difficult to persuade or induce them to construct new privies or improve the old ones. The President has been asked to cooperate in having these conditions remedied. He has pledged his support in three ways:

- 1) By instructing the Secretary of Public Instruction to provide at once for the school at each provincial capital, and as soon as possible for all other schools, concrete septic-tank privies, with sub-soil overflow;
- 2) By sanctioning a special budget from the next assembly for improving the sanitation in the Interior; and,
- 3) By appointing a committee to report on the best types of privies for low and wet regions.

15. Present Sanitary Conditions. Table 11 gives data on sanitary conditions in the various districts, and shows, for purposes of comparison, the percentage of persons in each district who

were found infected with Uncinariasis among all specimens examined since the work began:

Table 11

Average percentage of infection for all specimens examined, 60%

Province	District	Remarks	P.C. of Infection
Panama	Panama	Every house connected with a sewer (in city limits).	34%
	Taboga	Water-works in use; practically no toilets; night-soil disposal in ocean.	54%
	Arrrijan	One municipal privy in use; five more being built; three more desired.	85%
	Chane'	Five or six pit and surface privies in town; the rest of the people go to the bush.	78%
Bocas del Toro	Basti- mentos	No privies at all; waste supposed to be thrown into the ocean.	58%
	Chiriqui Grande	No sanitation; everybody lives on the shore in reach of the ocean.	77%
Cocle	Penonome	A large town; a few privies. Sanitary survey being made	67%

Report on Work for the

RELIEF AND CONTROL OF UNCINARIASIS IN EGYPT

Period January 1 to February 15, 1915.

EGYPT.

1. Extent of Operations. The work in Egypt during the period January 1 to February 15, 1915, consisted of (I) Hospital Work and (II) Survey Work, following the plan adopted for that country. Hospital work was continued at the traveling hospitals located at Bilbeis and Minia el Qamh in Sharqia province, and at the Murad Pasha hospital at El Deir, in Qaliubia province. At Bilbeis and Minia el Qamh, more patients applied for treatment than could be accommodated by the hospitals. Survey work also was in progress in the province of Assiout, but was not completed. The report, therefore, is confined to hospital work.

HOSPITAL WORK.

1. Examinations and Treatments for Uncinariasis. The number of persons microscopically examined for Uncinariasis during this period of six weeks was 3,034, of whom 2,049, or 67.5%, were found infected. Of the number infected, 1,809, or 88.3%, were admitted to the hospitals; and 1,795, or 99.2% of those admitted, were given full treatment for Uncinariasis. During this period, 586 patients who had been previously treated returned to the hospitals for re-examination, a month or more after being discharged, and it was found that 533, or 91 per cent., of them had been completely cured. Table 1 exhibits these results:

Table 1	TOTAL		Qaliubia Province		Sharqia Province			
			El Deir Hospital		Bilbeis Hospital		Minia Qamh Hospital	
	No.	P.	No.	P.	No.	P.	No.	P.
1. Persons Microscopically Examined for Uncinariasis	3034	----	524	-----	821	----	1689	----
2. Persons Found Infected with Uncinariasis..	2049	67.5	390	74.4	537	65.4	1122	66.4
3. Persons Admitted to Hospitals	1809	88.3	352	90.2	407	75.8	1050	93.6
4. Persons Given Full Treatment for Uncinariasis	1795	99.2	352	100.0	396	97.3	1047	99.7
5. Persons Discharged Before Full Treatment was Completed	14	.8	---	----	11	2.8	3	.3
6. Persons Microscopically Re-examined for Uncinariasis After Having Received Full Treatment	586	----	---	----	191	----	395	----
7. Persons Found Cured of Uncinariasis Upon Microscopic Re-examination	533	91.0	---	----	176	92.1	357	90.4

2. Microscopic Examinations for All Parasites. Microscopic examinations for Bilharzia, and for infection with intestinal parasites other than Uncinaria, were carried on simultaneously with the routine examinations for Uncinaria. The results are exhibited in Table 2:

Table 2	TOTAL		Qaliubia Province		Sharqia Province			
			El Deir Hospital		Bilbeis Hospital		Minia Qamh Hospital	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Microscopic Examinations Made:								
(a) Total	5606	----	1507	----	2221	----	4878	----
(b) For Uncinariasis	3034	----	524	----	821	----	1689	----
(c) For Bilharzia	5572	----	983	----	1400	----	3189	----
2. Microscopic Examinations Positive:								
(a) Total	3129	36.4	635	42.1	772	34.8	1722	35.3
(b) To Uncinariasis	2049	67.5	390	74.4	537	65.4	1122	66.4
(c) To Bilharzia	1080	19.4	245	24.9	235	16.7	600	18.8
3. Specimens Examined for Uncinariasis Disclosing Incidentally the Presence of Other Intestinal Parasitic Infection:								
(a) Oxyuris	820	27.0	279	53.2	219	26.7	322	19.1
(b) Ascaris	760	25.0	215	41.0	115	14.0	430	25.5

3. Clinical Examinations for Diseases Other Than Uncinariasis. Persons admitted to the hospitals were also subjected to clinical examinations for diseases such as Pellagra and Bilharzia, and for such morbid conditions as Edema, Albuminuria, enlarged liver, dilated heart, and enlarged spleen. Table 3 shows the results of these examinations:

Table 3	TOTAL		Qaliubia Province		Sharqia Province			
			El Deir Hospital		Bilbeis Hospital		Minia Qamh Hospital	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Persons Admitted to Hospitals	1809	----	352	----	407	----	1050	----
2. Persons Presenting Clinical Evidence of:								
(a) Bilharzia	1105	61.	246	69.9	245	60.2	614	58.5
(b) Albuminuria	984	54.3	199	56.5	181	44.4	604	57.5
(c) Enlarged spleen	206	11.4	28	7.9	39	9.5	139	13.2
(d) Pellagra	181	10.	20	5.7	119	29.2	42	4.
(e) Dilated heart	155	8.6	9	2.5	40	9.8	106	10.1
(f) Enlarged liver	90	4.9	13	3.7	19	4.7	58	5.5
(g) Edema*	15	.8	5	1.4	8	2.0	2	.2

* Present in absence of kidney disease, as evidenced by urinary casts.



4. Improvement in Patients Treated: Three Selected Cases. Of the patients admitted to the hospitals, 54 per cent. had less than half the normal amount of haemoglobin on admission; on re-examination of these same patients one month after discharge, it was found that only 16 per cent. had as little haemoglobin as that. The value of the treatment is not always manifested at once. Occasionally, marked increase in the percentage of haemoglobin is found when the patient is seen again. Table 4 shows the improvement in three patients who received no special haematinic treatment:

Table 4				
Number of the Patient	Haemoglobin Percentage		Result of Re-Examination	Period Between Examination and Re-Examination
	On Admission	On Re-Examination		
30	10	60	No ova found in feces	Nine months
226	20	80	No ova found in feces	Seven months, ten days
896	10	50	No ova found in feces	Forty days

5. Improvement in Patients Treated: Cases Taken at Random. It will also be seen from Table 5 that the 1809 patients admitted to the hospitals had an average haemoglobin percentage of 47.3 upon admission. Opportunity was had for re-examining 719 of these, more than one month after treatment, and it was found that this average had been increased to 52.2%:

Table 5	TOTAL		Qaliubia Province		Sharqia Province			
			El Deir Hospital		Bilbeis Hospital		Minia Qamh Hospital	
	On Admission	On Re-examination	On Admission	On Re-examination	On Admission	On Re-examination	On Admission	On Re-examination
1. Average Haemoglobin for All Tests Made	47.3	52.3	49.0	60.9	44.6	49.1	47.8	52.8
2. Total Haemoglobin Tests Made	1809	719	352	69	407	255	1040	395
3. Average Haemoglobin:								
100-91								
90-81		2		2				
80-71	25	45		8			25	37
70-61	181	113	16	31	11	5	154	77
60-51	615	262	199	20	109	128	307	114
50-41	581	212	89	6	194	96	298	110
40-31	257	66	24	1	58	20	175	45
30-21	100	15	15	--	22	5	63	10
20-11	27	4	3	1	7	1	17	2
10-1	23	--	6	--	6	--	11	--

